OWNER'S MANUAL

Model SC-1200A
For 12-Volt Batteries

SpeedCharge™

computer smart™

2 amp SLOW CHARGE

12 amp FAST CHARGE

8 amp MEDIUM CHARGE

Fully Automatic Microprocessor Controlled Battery Charger with Battery Tester and Alternator Tester

CAUTION:
Read all Safety Rules and Operating Instructions, and follow them with each use of this product.

Schumacher®
ELECTRIC CORPORATION
Mount Prospect, IL 60056
U.S.A.

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SAVE THIS OWNER'S MANUAL AND READ BEFORE EACH USE.
Model SC-1200A, Fully Automatic Battery Charger offers features to accommodate the needs for home or light commercial use. This manual will explain how to use the charger safely and effectively. Please read and follow these instructions and precautions carefully.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment on and off, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio technician for help.

IMPORTANT SAFETY INSTRUCTIONS

WARNING – RISK OF EXPLOSIVE GASES

WORKING IN VICINITY OF A LEAD-ACID BATTERY IS DANGEROUS. BATTERIES GENERATE EXPLOSIVE GASES DURING NORMAL BATTERY OPERATION. FOR THIS REASON, IT IS OF UTMOST IMPORTANCE THAT EACH TIME BEFORE USING YOUR CHARGER, YOU READ THIS MANUAL AND FOLLOW THE INSTRUCTIONS EXACTLY.

To reduce risk of battery explosion, follow these instructions and those published by battery manufacturer and manufacturer of any equipment you intend to use in vicinity of battery. Review cautionary markings on these products and on engine.

SAVE THESE INSTRUCTIONS

This manual contains important safety and operating instructions for battery charger Model **SC-1200A**

- **WARNING:** Handling the cord on this product or cords associated with accessories sold with this product, will expose you to lead, a chemical known to the State of California to cause cancer and birth defects or other reproductive harm. ***Wash hands after handling.***
- Read all instructions and cautions printed on the battery charger, battery, and vehicle or equipment using battery.
- Use charger only on lead-acid type rechargeable batteries, such as those used in cars, trucks, tractors, airplanes, vans, RV's, trolling motors, etc. This charger is not intended to supply power to a low voltage electrical system other than in a starter-motor application.
- **Never** use charger for charging dry cell batteries that are commonly used with home appliances like radios, stereos, remote controls, etc. These batteries may burst and cause personal injury.
- Do not disassemble charger. Take it to a qualified service professional if service or repair is required. Incorrect assembly may result in fire or electrical shock.
- To reduce risk of electrical shock, unplug the charger from the outlet before attempting any maintenance or cleaning.
- Always charge battery in a well-ventilated area.
- **WARNING:** Battery chargers get hot during operation and must have proper ventilation. Air needs to flow around entire charger. Do not set charger on flammable materials like carpeting, upholstery, paper, cardboard, etc. Charger may damage leather, plastic and rubber.

HELP US HELP YOU ——
Remember:

Place charger as far away from the battery being charged as the charger cables will permit.

Do not expose charger to rain or snow.

Never charge a frozen battery. If battery fluid (electrolyte) becomes frozen, bring battery into a warm area to allow to thaw before you begin charging.

Never allow battery acid to drip on charger when reading specific gravity or filling battery.

Never set a battery on top of charger.

Never place charger directly above battery being charged. The gases from the battery will corrode and damage the charger.

Never touch the battery clamps together when the charger is on. You could cause a spark.

Never operate charger if it has received a hard blow, been dropped, or otherwise damaged. Take it to a qualified professional for inspection and repair.

Be sure to position the charger power cord to prevent it from being stepped on, tripped over, or damaged.

Never pull out the plug by the cord when unplugging the charger. Pulling on the cord may cause damage to the cord or the plug.

Do not operate the charger if it has a damaged power cord or plug. Have the cord replaced.

PERSONAL SAFETY PRECAUTIONS

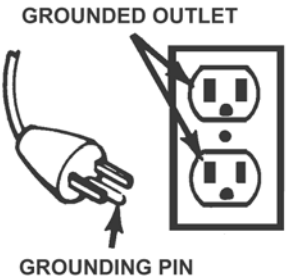
- **Wear complete eye and clothing protection** when working with lead-acid batteries.
- **Make sure** that someone is within range of your voice to come to your aid if needed while you work with or are near a lead-acid battery.
- **Have plenty of fresh water and soap** nearby for use in case battery acid contacts your eyes, skin, or clothing. If this happens, wash immediately with soap and water. Then get medical attention.
- **Avoid touching your eyes** while working with a battery. Acid particles (corrosion) may get into your eyes. If this occurs, flush eyes immediately with running cold water for at least 10 minutes. Then immediately get medical attention.
- **Never** charge a frozen battery.
- **Remove all personal metal items** from your body such as rings, bracelets, necklaces and watches, while working with a lead-acid battery. A battery can produce a short circuit current high enough to weld a ring (or the like) to metal, causing a severe burn.
- **Take care** not to drop any metal tool or metal object onto the battery. This may result in a spark or short circuit across the battery or another electrical device that may cause an explosion.
- **Always** operate the battery charger in an open, well-ventilated area.
- **Never** smoke or allow a spark or flame in the vicinity of the battery or engine. Batteries generate explosive gases.
- **Neutralize** any acid spills thoroughly with baking soda before attempting to clean up.

BEFORE USING YOUR BATTERY CHARGER

It is important to understand the charger's requirements. This section explains the charger's electrical requirements and how to prepare a battery for charging.

PLUGGING IT IN

Your charger requires a 120V AC receptacle installed according to all local codes and ordinances.



USING AN EXTENSION CORD

The use of an extension cord is not recommended. If you must use an extension cord, please make sure that you follow these guidelines:

- Make sure that pins on plug of extension cord are the same number, size, and shape as those of plug on charger.
- Check that the extension cord is properly wired and in good electrical condition.
- Make sure that the wire size is large enough for its length and for the AC ampere rating, as specified in the chart below.

MINIMUM RECOMMENDED EXTENSION CORD				
Length of Cord, in Feet	25	50	100	150
AWG* Size of Cord	18	16	12	10

*AWG=American Wire Gauge

PREPARING YOUR BATTERY TO BE CHARGED

It is important that you read and follow these guidelines while you are preparing to charge the battery.

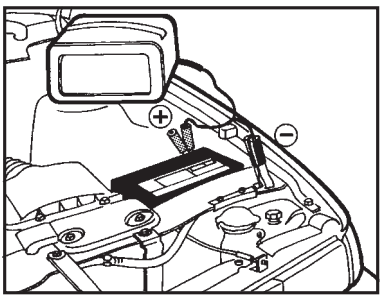
- Make sure that you have a 12 volt lead-acid battery. Determine voltage of battery by referring to vehicle owner's manual. Charge battery initially at charger's lowest rate.
- Clean the battery terminals. Be careful to keep corrosion from getting in or around your eyes.
- Wear safety glasses. See additional "Personal Safety Precautions" on page 4.
- For batteries with removable vent caps, if required, add distilled water to each cell until the battery acid reaches the level recommended by the manufacturer. This will help purge excessive gases from the cells. Be careful not to overfill. If you have a sealed battery with non-removable vent caps, no action is necessary.
- Take time to read all of the battery manufacturer's specific precautions, such as removing or not removing vent caps while charging, and recommended rates of charge.
- Be sure that the area around the battery is well ventilated while it is being charged. Gas can be forcefully blown away by using a piece of cardboard or other nonmetallic material as a fan.
- If it is necessary to remove the battery from the vehicle to charge it, always remove the grounded terminal from the battery first. Turn off all vehicle accessories to avoid sparks from occurring.
- **NOTE:** A marine (boat) battery installed in a boat must be removed and charged on shore.

OPERATING INSTRUCTIONS

IMPORTANT: Follow all safety instructions and precautions when charging your battery. Wear complete eye protection and clothing protection. Charge your battery in a well-ventilated area.

CHARGING BATTERY IN THE VEHICLE:

1. Avoid personal injury by keeping clear of fan blades, belts, pulleys and other engine parts.
2. Avoid damaging the charger by keeping the power cord and output cords away from the hood, door or moving engine parts.
3. Note the polarity of the battery posts by checking the identification marks on the battery: POSITIVE (POS, P or +) and NEGATIVE (NEG, N or -). The positive post is usually larger than the negative post.
4. Identify which battery post is grounded or connected to the chassis. THIS IS NORMALLY THE NEGATIVE POST.

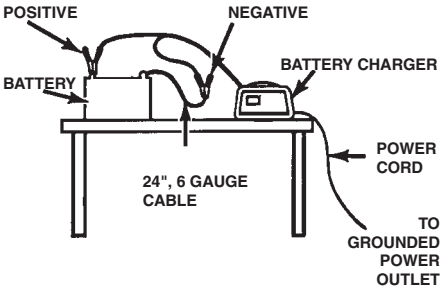


NEGATIVE GROUNDED SYSTEM

5. **Connecting to a negative-grounded system:** Connect the red (POSITIVE) output clamp to the POSITIVE post of the battery. Rock and twist the clamp back and forth to be sure a solid electrical connection is made. Then connect the black (NEGATIVE) output clamp to a heavy, unpainted metal part of the chassis or engine block, away from the battery (see figure above). DO NOT connect clamp to negative battery post, carburetor, and fuel line or sheet metal part.

   Connecting to a positive-grounded system: Connect the black (NEGATIVE) output clamp to the NEGATIVE post of the battery. Rock and twist the clamp back and forth to be sure a solid electrical connection is made. Then connect the red (POSITIVE) output clamp to a heavy, unpainted metal part of the chassis or engine block, away from the battery. DO NOT connect clamp to positive battery post, carburetor, and fuel line or sheet metal part.
6. Plug power cord into an AC outlet. The charger will be set to the Tester Mode for REGULAR battery type.
7. Press the appropriate control buttons to select the desired charge rate and battery type. The CHARGING (yellow) LED should light and the charging process should start. If the CHECK (red) LED is on, check for correct cable connections.
8. To disconnect the charger, unplug its power cord before attempting to disconnect the output clamps. Then, standing away from the battery, remove the output clamp from the chassis or engine block. Finally, remove the output clamp from the battery post.
9. Clean and store the charger in a dry location.

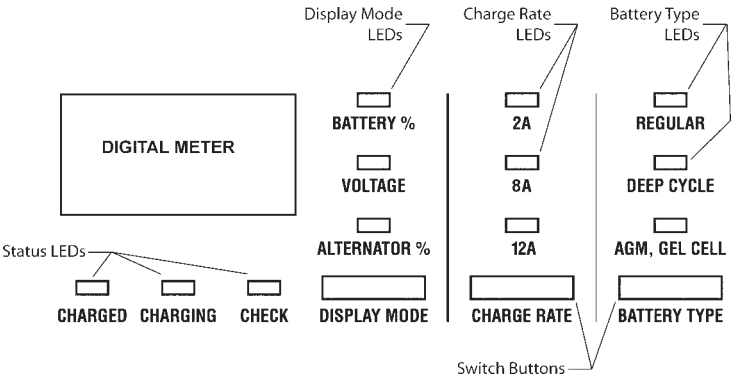
CHARGING BATTERY REMOVED FROM THE VEHICLE:



1. Note the polarity of the battery posts by checking the identification marks on the battery: POSITIVE (POS, P or +) and NEGATIVE (NEG, N or -). The positive post is usually larger than the negative post.
2. Attach at least a 24-inch-long, 6-gauge (AWG), insulated battery cable to NEGATIVE (NEG, N or -) battery post. Rock and twist the clamp back and forth to be sure a solid electrical connection is made.
3. Connect the red (POSITIVE) output clamp to the POSITIVE battery post. Rock and twist the clamp back and forth to be sure a solid electrical connection is made.
4. Position yourself as far away from the battery as possible, and then connect the black (NEGATIVE) output clamp to the free end of the cable.
5. Plug the power cord into an AC outlet. The charger will be set to the Tester Mode for REGULAR battery type.
6. Press the appropriate control buttons to select the desired charge rate and battery type. The CHARGING (yellow) LED should light and the charging process should start. If the CHECK (red) LED is on, check for correct cable connections.
7. To disconnect the charger, unplug its power cord before attempting to disconnect the charger clamps. Then, standing away from the battery, remove the output clamp from the NEGATIVE battery post. Finally, remove the output clamp from the POSITIVE battery post.
8. Clean and store the charger in a dry location.

IMPORTANT: Follow all safety instructions and precautions when charging your battery. Wear complete eye protection and clothing protection. Charge your battery in a well-ventilated area.

SPEEDCHARGE CONTROL



SC-1200A CONTROL PANEL

DISPLAY MODE SWITCH

Use this switch to set the function of the digital meter to one of the following three.

- **BATTERY %:** The digital meter displays an estimate of the percent of charge of the battery connected to the charger battery clamps.
- **VOLTAGE:** The digital meter displays the voltage at the charger battery clamps in DC volts.
- **ALTERNATOR %:** The digital meter displays an estimate of the output of the vehicle charging system connected to the charger battery clamps as compared to a properly functioning system.

CHARGE RATE SWITCH

Use this switch button to set the charge rate to one of the following three.

- **2A CHARGE RATE:** Intended for charging small batteries such as those commonly used in garden tractors, snow mobiles and motorcycles. The 2A rate is not intended to be used as a trickle charger for larger batteries.
- **8A** or **12A CHARGE RATE:** Use for charging automotive batteries, marine batteries, and deep cycle batteries. Not intended for industrial applications.

BATTERY TYPE SWITCH

Use this switch button to set the type of battery to be charged to one of the following three.

- **REGULAR:** This is the type of battery usually used in cars, trucks, and motorcycles. These batteries have vent caps and are often marked “low maintenance” or “maintenance-free”.
- **DEEP CYCLE:** Deep cycle batteries are usually marked as “deep cycle” or “marine”. Deep cycle batteries are usually larger than the other types.
- **AGM, GEL CELL:** AGM and gel cell batteries have sealed cases without vent caps. Such batteries are often smaller than the other types.

With the exception of AGM and gel cell batteries, all other battery types may or may not have vent caps. *Vent caps are located on top of the battery and provide a means to add distilled water when needed*. Batteries should be marked with their type. If charging a battery that is not marked, check the manual of the item that uses the battery. If the battery type is unknown, use the REGULAR setting. Make sure the battery complies with the safety instructions on page 3.

SC-1200A CONTROL PANEL GUIDE

MODE OF OPERATION	Charged	Charging	Check	Battery %	Voltage	Alternator %	2 AMP	8 AMP	12 AMP	Regular	Deep-Cycle	AGM, Gel Cell	Digital Display
Initial power-up, battery not detected			O		O					O			0.0
No battery or reversed battery detected			O	User selected			User selected			User selected			0% or 0.0V
Battery tester activated				O						User selected			0~100%
Battery tester with charged battery	O			O						User selected			100%
Battery tester with no battery			O	O						User selected			0%
Voltage meter activated					O					User selected			0.0~17.0V
Alternator tester activated						O				User selected			0~199%
Alternator tester on good alternator	O					O				User selected			0~199%
Alternator tester on bad alternator			O			O				User selected			0~199%
2 Amp charge with battery detected		O		User sel.			O			User selected			xx% or xx.xV
8 Amp charge with battery detected		O		User sel.				O		User selected			xx% or xx.xV
12 Amp charge with battery detected		O		User sel.					O	User selected			xx% or xx.xV
Charge complete - Maintain Mode started	O			User sel.									100% or xx.xV
Desulfation mode activated		B		User sel.			User selected			User selected			15% or 16V
Charge aborted			B										18.8 (B)

O indicates an LED that is on continuously.

B indicates an LED that blinks on and off.

USING THE BUILT-IN BATTERY TESTER

OVERVIEW

The charger has a built-in battery tester that displays either an accurate battery voltage or an estimate of the battery's relative charge based on the battery voltage and a scale set by the Battery Council International.

TESTING SEQUENCE

There are four basic steps required to use the charger as a battery tester.

1. Connect the charger battery clamps to the battery. Be sure to follow all of the precautions listed under "OPERATING INSTRUCTIONS".
2. Connect the charger power cord to a 120 VAC outlet. Again, be sure to follow all of the precautions listed under "OPERATING INSTRUCTIONS".
3. If necessary, press the Battery Type button until the correct type is indicated.
4. Read the voltage on the digital meter or press the display mode button to set the tester to "Battery %" and read the battery percent.

TESTER AND CHARGER

When first turned on, the charger operates only as a tester, not as a charger. To continue to use it as only a tester, avoid pressing the CHARGE RATE switch button. Selecting a charge rate activates the battery charger and deactivates the tester.

POWER-UP IDLE TIME LIMIT

If no switch button is pressed within ten minutes after the unit is first powered up, the unit will automatically switch from tester to charger, if a battery is connected. In that case, the unit will be set for the 2A charge rate and REGULAR battery type.

TESTER WITHOUT TIME LIMIT

If either the DISPLAY MODE or BATTERY TYPE button is pressed within the first ten minutes after the unit is powered up, the unit will remain a tester (not a charger) indefinitely, unless a charge rate is selected.

TESTING AFTER CHARGING

After the unit has been changed from tester to charger (by selecting a charge rate), it remains a charger as long as it has power. Disconnect and reconnect the power to change the unit back to a tester.

TESTER STATUS LED's

When the charger is operating as a battery tester, the status LED's light under the following conditions.

- The CHARGED (green) LED will light if a fully charged battery is tested.
- The CHARGING (yellow) LED does not light in the battery test mode.
- The CHECK (red) LED will light if a battery is not properly connected.
- When the tester display mode is set to voltage, none of the Status LED's light (it could be testing a battery or an alternator) as long as a voltage greater than one volt is detected.

INITIAL PERCENT CALCULATION

When a battery % is calculated for the first time after connecting a battery, the digital meter will show two dashes ("--") for several seconds while the tester analyzes the battery.

NOTES FOR TESTING BATTERY %

A recently charged battery could have a temporarily high voltage due to what is known as "surface charge". The voltage of such a battery will gradually drop during the period immediately after the charging system is disengaged. Consequently, the tester could display inconsistent values for such a battery. For a more accurate reading, the surface charge should be removed by temporarily creating a load on the battery, such as by turning on lights or other accessories.

The battery % ranges from 0 to 100.

The battery tester is only designed to test 12V batteries. Testing a device with a rapidly changing voltage could yield unexpected or inaccurate results.

USING THE BUILT-IN ALTERNATOR TESTER

The charger has a built-in alternator tester that displays either an accurate alternator voltage or a percentage estimate of the alternator's relative output compared to normal alternators. The Alternator % values displayed should be taken as general reference, not precise diagnosis. The alternator tester functions the same as the battery tester (see previous section of this manual for details) with a few differences.

TESTING SEQUENCE

There are three basic steps required to use the charger as an alternator tester.

1. Connect the charger battery clamps to the battery or charging system. Be sure to follow all of the precautions listed under "OPERATING INSTRUCTIONS".
2. Connect the charger power cord to a 120 VAC outlet. Again, be sure to follow all of the precautions listed under "OPERATING INSTRUCTIONS".
3. Start the vehicle and turn on the vehicle's headlights. Read the voltage on the digital meter or press the display mode button to set the tester to "Alternator %" and read the alternator percent.

TESTER STATUS LED's

When the charger is operating as an alternator tester, the status LED's light under the following conditions:

- The CHARGED (green) LED will light if the output of the charging system is at the normally desired level.
- The CHARGING (yellow) LED does not light in the alternator test mode.
- The CHECK (red) LED lights if the voltage is much higher or lower than normally desired level.
- When the tester display mode is set to voltage, none of the status LED's light (charger could be testing a battery or an alternator) as long as a voltage greater than one volt is detected.

ALTERNATOR TESTING NOTES

- The alternator percent display can range from 0 to 199.
- The display mode cannot be set to "Alternator %" during charging.
- If the charger is in the charge mode, disconnect the AC cord from the outlet and reconnect to activate the tester mode.

USING YOUR BATTERY CHARGER

OVERVIEW
Using the battery charger is very simple. First, connect the battery and AC power following the precautions listed under "OPERATING INSTRUCTIONS". Then select the appropriate BATTERY TYPE and CHARGE RATE for your battery. The charger will then do everything automatically. This section explains a few details.

CHARGING: If the charger does not detect a properly connected battery, the CHECK (red) LED will light continuously until a battery is detected. Charging will not begin while the CHECK light is on. When charging begins, the CHARGING LED will be lit.

AUTOMATIC SHUT OFF: When the 2A, 8A, or 12A charge rate is selected, the charger is set to perform an automatic charge. When an automatic charge is performed, the charger stops charging automatically after the battery is fully charged.

ABORTED CHARGE: If charging can't be completed normally, charging will be aborted. When charging is aborted, the charger's output is shut off and the red CHECK LED and digital meter blink on and off (at opposite times). In that state, the charger ignores all buttons. To reset from after an aborted charge, either disconnect the battery or unplug the charger.

DESULFATION MODE: If a battery is left discharged for an extended period, it could become sulfated and not accept a normal charge. If the charger detects a sulfated battery, the charger will switch to a special mode of operation designed for such batteries. Activation of the special desulfation mode is indicated by blinking the CHARGING LED. If successful, normal charging will resume after the battery is desulfated. The CHARGING LED will then stop blinking and light continuously. Desulfation could take up to 10 hours. If desulfation fails, charging will be aborted and the CHECK (red) LED will blink.

COMPLETION OF CHARGING: Charge completion is indicated by the CHARGED (green) LED; when lit, the charger has stopped charging and switched to the Maintain Mode of operation.

MAINTAIN MODE: When the CHARGED (green) LED is lit, the charger has started Maintain Mode. This mode of operation is also known as Float-Mode Monitoring. In this mode, the charger keeps the battery fully charged by delivering a small current, when necessary. The voltage is maintained at a level determined by the BATTERY TYPE selected.

GENERAL CHARGING NOTES:
The charger is designed to control its cooling fan for efficient operation. Consequently, it is normal for the fan to start and stop when maintaining a fully charged battery. The fan does not normally run in Tester Mode.

If the charge mode is changed after charging has started (by pressing the CHARGE RATE or BATTERY TYPE button), the charging process will be restarted.

The voltage displayed during charging is the charging voltage and usually will be higher than the battery's resting voltage.

KNOW YOUR CHARGER

Read this entire manual before using your charger. The items below are additional features of your charger.

Relay: Your charger is equipped with a relay. This device turns the charge current on and off to the battery. It is normal to occasionally hear a clicking sound when the relay is turned on or off.

Fan: Your charger is equipped with a fan. It is normal for the fan to be on while the charger is charging (as long as the voltage is above 9V). The fan is normally off at other times but may cycle on and off due to temperature or other conditions (See Overtemperature Protection). Keep the area near the charger clear of obstructions to allow the fan to operate efficiently.

Overtemperature Protection: Your charger is equipped with an internal thermocouple. This device monitors the temperature and allows the charger to turn the fan on and off as needed. If the temperature rises above a preset level, the charge current will be reduced to allow the charger to cool. If the temperature can not be reduced at the lower charge rate, the charge current will be turned off until the temperature is reduced to a normal level. The charger will then continue where it left off. For best results, do not place the charger in direct sunlight or enclosed spaces with high temperatures.

CHARGING TIPS

Read this entire manual before using your charger. The tips below serve only as a guide for specific situations.

Reviving your battery: If you only wish to charge your battery enough to operate your vehicle; you don't need to wait for the entire charging process to be completed. When the charger displays a battery % of 77 or more (see page 14), the battery has usually been charged enough for the vehicle to start and operate normally.

Completing an interrupted charge: If the charging process has been interrupted and restarted after the charger displays a battery % of 85 or more, the charger could go straight to Maintain Mode (see previous page). However, if the original charge was started using 12A, the charge can often be completed using the 2A rate.

MAINTENANCE AND CARE

A minimal amount of care can keep your battery charger working properly for years.

1. Clean the clamps each time you are finished charging. Wipe off any battery fluid that may have come in contact with the clamps to prevent corrosion.
2. Coil the input and output cords neatly when storing the charger. This will help prevent accidental damage to the cords and charger.
3. Occasional cleaning of the case of the charger with a soft cloth will keep the finish shiny and help prevent corrosion.
4. Store the battery charger in a clean and dry location.

BATTERY PERCENT AND CHARGE TIME

This charger adjusts the charging time in order to charge the battery completely, efficiently and safely. The microprocessor automatically makes the necessary decisions. However, this section includes guidelines that can be used to estimate charging times.

The duration of the charging process depends on three factors:

1. **Battery State** – If a battery has only been slightly discharged, it can be charged in less than a few hours. The same battery could take up to 10 hours if very weak. The battery state can be estimated by using the built-in tester (see page 10). The lower the reading the longer charging will take.
2. **Battery rating** – A higher rated battery will take longer to charge than a lower rated battery under the same conditions. A battery is rated in ampere-hours (AH), reserve capacity (RC) and cold cranking amps (CCA). The lower the rating the faster the battery will be charged.
3. **Charge rate** – The charge rate is measured in amps. This charger provides charge rates of 2A, 8A and 12A. The 2A rate is for charging smaller batteries such as those used for motorcycles and garden tractors. Such batteries should not be charged using the 8A or 12A rates. The **8**A and 12A rates are for charging larger batteries. The charger charges at the selected charge rate and eventually reduces the charge rate in a controlled manner. After the charging process has started, the digital display can be used to determine charging progress by selecting the BATTERY % mode.

There are some important facts to keep in mind when charging a battery.

- When the display indicates 77% charged, the battery has been charged enough to start most vehicles and has already been charged as much as by many other battery chargers.
- When the display indicates 85% charged, the battery has already been charged at least as much as by most other battery chargers.
- The battery % shown in tester mode is an estimate based on the battery voltage and a scale set by the Battery Council International. The battery % shown in charger mode is an estimate of the relative charge in the battery compared to the charge it should have if the charging process is allowed to complete.
- The battery % shown in tester mode can be used to estimate the relative charge time. The lower the % shown, the longer the charge time for a given battery.
- The battery % shown in charger mode is an indication of the relative progress of the charging process. The higher the battery % displayed, the less charge time remains.
- The more a battery is discharged, the faster it absorbs charge from a charger. That means that the battery % increases faster at the beginning of the charging process than at the end. In other words, it takes longer for the battery to absorb the last few percent of charge than the first several percent.

TROUBLESHOOTING

Performance problems often can be corrected by the user. Please completely read this chart for possible solutions to common problems.

PROBLEM	POSSIBLE CAUSE	SOLUTION
The battery is connected and the charger is on, but it isn't charging.	The charger is in tester mode, not charger mode.	Press the CHARGE RATE button to select a charge rate and activate charging.
Indicator lights are lit in an erratic manner not explained in the "Using Your Battery Charger" section.	The charger may be defective. A button may have been pressed when the charger was plugged in.	Return to place of purchase for replacement. Make sure nothing is touching the control panel, then unplug the unit and plug it in again.
All the lights are flashing.	Charger in abort mode. Battery may be bad.	See "USING YOUR BATTERY CHARGER."
The CHECK (red) light always flashes before the battery is completely charged.	This will happen if the battery did not reach full charge within 24 hours. May be due to a very large battery or a bank of batteries requiring more power than the charger can deliver in 24 hours. Battery may also be faulty.	Reset the charger by unplugging it or briefly disconnecting the negative battery clip. Select the desired charge rate and battery type again, if necessary.
The green CHARGED light turns on a few minutes after connecting to the battery.	The battery may be fully charged or recently charged, leaving the battery voltage high enough to appear to be fully charged.	If the battery is in a vehicle, turn the headlights on for a few minutes to reduce the battery voltage and try charging again. Also try a lower CHARGE RATE selection.
The charger is making an audible clicking sound.	The charger has a relay that turns the current on and off to the battery.	No problem, this is a normal condition.
The fan turns on and off unexpectedly.	The fan is turned on and off as determined by the software and temperature.	No problem, this is a normal condition.
The measured current is much lower than what was selected.	The charger reached the maximum voltage and is reducing the current. The charger detected an over-temperature condition and has reduced the current to allow the unit to cool.	No problem, this is a normal condition. Make sure the charger does not have the side ventilation holes blocked. Move charger out of the sun and into the shade.
The charger was unplugged from the wall but the display is still on.	The battery is supplying the power to the display.	Disconnect the battery or press CHARGE RATE or BATTERY TYPE switch.

LIMITED WARRANTY

SCHUMACHER ELECTRIC CORPORATION,
801 BUSINESS CENTER DRIVE,
MOUNT PROSPECT, ILLINOIS 60056-2179

MAKES THIS LIMITED WARRANTY TO THE ORIGINAL PURCHASER AT RETAIL OF THIS PRODUCT. THIS LIMITED WARRANTY IS NOT TRANSFERABLE.

Schumacher Electric Corporation warrants this battery charger for five years from date of purchase at retail against defective material or workmanship. If such should occur, the unit will be repaired or replaced at the option of the manufacturer. It is the obligation of the purchaser to forward the unit together with proof of purchase, transportation and/or mailing charges prepaid to the manufacturer or its authorized representative.

This limited warranty is void if the product is misused, subjected to careless handling, or repaired by anyone other than the manufacturer or its authorized representative.

The manufacturer makes no warranty other than this limited warranty and expressly excludes any implied warranty including any warranty for consequential damages.

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SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES OR LENGTH OF IMPLIED WARRANTY SO THE ABOVE LIMITATIONS OR EXCLUSIONS MAY NOT APPLY TO YOU.

THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS AND YOU MAY ALSO HAVE OTHER RIGHTS THAT VARY FROM STATE TO STATE.

WARRANTY VALIDATION: The enclosed “Warranty Validation Card” must be completed and mailed within 10 days of product purchase to activate this limited warranty.